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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,880	03/22/2001	Nobuyuki Yokosawa	017447/0172	4203

7590

10/02/2002

Richard L. Schwaab
FOLEY & LARDNER
Washington Harbour
3000 K Street, N.W., Suite 500
Washington, DC 20007-5109

EXAMINER

GILMAN, ALEXANDER

ART UNIT

PAPER NUMBER

2833

DATE MAILED: 10/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

5/15/02
11/15

Office Action Summary

Application No.

09/813,880

Applicant(s)

YOKOSAWA ET AL.

Examiner

Alexander Gilman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

in view of 5,386,176

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al in view of Tamatani et al and Oversluizen.

Shimizu et al disclose a phosphor excited by a vacuum ultraviolet ray, said phosphor comprising (col. 4, lines 10-18):

$(Y_{1-p-q-r}, Gd_q)$ and $(Al_{1-s})_5 O_{12}$

where $(0 < p < 0.8; 0.03 < q < 0.2; 0.003 < r < 0.08; 0.0 < s < 1)$.

Shimizu et al do not disclose in the phosphor formula presence of boron oxides and activation by terbium.

It would be obvious to include in Shimizu et al phosphor formula aluminum oxides, since it is well known in the art utilizing boron oxides along with aluminum oxide in rare earth phosphor compositions used as the green emitting phosphor (Tamatani et al, US 5,289,081; col. 1, lines 60-65). Also, it is well known Oversluizen, US 4,798,76; col. 1, lines 45-56) using terbium and/or cerium for activation alumino-borate compositions comprising gadolinium.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of Tamatani and Watanabe et al.

Ishikawa et al (US 5,159,237) disclose a phosphor excited by a vacuum ultraviolet ray, said phosphor comprising (col. 6, Table 5):

$Y_{0.66} Tb_{0.007}$

Kim et al. 10(1), 49-54
or Han'guk Chae'lyo 10(1), 49-54
Hoeck (2000)

Journal of Physics and Chemistry of Solids
Hongpeng et al
2000, 61(12), 1985-88

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In the phosphor formula of Ishikawa et al, presence of aluminum and boron oxides is not disclosed, as well as, using terbium in amount at least 0.2 of yttrium concentration and cerium content in range $0.00001 < y < 0.01$ (claim 8).

It would be obvious to include in Ishikawa et al phosphor formula aluminum and boron oxides, since it is well known in the art to use aluminum oxides along with boron oxide in rare earth phosphor compositions used as the green emitting phosphor (Tamatani et al, US 5,289,081; col. 1, lines 60-65), for example, for controlling the phosphor charge characteristics. Also, it is well known in the art, for green emitting phosphor to use terbium in amount at least 0.2 of yttrium concentration and cerium at a small concentration (Watanabe et al, US 4,208,611).

3. Claims 1- 3, 5, and 6, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Laid-open No. Hei 11-71581 in view of Tamatani.

With regard to claims 1 - 3, Japanese Patent Laid-open No. Hei 11-71581 discloses a phosphor excited by a vacuum ultraviolet ray, said phosphor comprising

$(Y_{1-x-y}, Gd_x Tb_y)$ and (B_2O_3) ,

where $(0.08 < x, 0.8, 0.05 < y < 0.25, \text{ and } 0.13 < X+Y < 1.0)$.

Japanese Patent Laid-open No. Hei 11-71581 does not disclose in the phosphor formula presence of aluminum oxides.

It would be obvious to include in Japanese Patent Laid-open No. Hei 11-71581 phosphor formula aluminum oxides, since it is well known in the art to use aluminum oxides along with boron oxide in rare earth phosphor compositions used as the green emitting phosphor (Tamatani et al, US 5,289,081; col. 1, lines 60-65), for example, for controlling the phosphor charge characteristics.

With regard to claim 5, Japanese Patent Laid-open No. Hei 11-71581 when modified by Tamatani et al discloses the phosphor composition which is capable produce the CIE chromaticity characteristics claimed.

With regard to claim 6, Japanese Patent Laid-open No. Hei 11-71581 when modified by Tamatani et al discloses (Tamatani et al) the phosphor composition applied to a discharge lamp.

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4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Laid-open No. Hei 11-71581 in view of Tamatani, as applied to claim 1 above, and further in view of Yocom et al.

Japanese Patent Laid-open No. Hei 11-71581 when modified by Tamatani discloses all of the limitations except for specifically teaching rhombohedral configuration of the phosphor crystal.

Yocom et al (US 3,981,819) disclose rhombohedral configuration of the phosphor crystal.

It would be obvious to use rhombohedral configuration of the phosphor crystals in Japanese Patent Laid-open No. Hei 11-71581 –Tamatani, as taught by Yocom et al, since in both cases the phosphor composition based on *Gd*, *Y* and activated by *Tb* and *Ce*.

5. Claims 8, 9, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Laid-open No. Hei 11-71581 in view of Tamatani, as applied to claim 1 above, and further in view of Beers et al.

Japanese Patent Laid-open No. Hei 11-71581 when modified by Tamatani discloses all of the limitations except for two activators *Te* and *Ce* at the specific concentration.

Beers et al (US 4,631,144) disclose (col. 6 , line 44) the formula of phosphor utilizing *Tb* and *Ce* at the specific concentration.

It would be obvious to utilizing *Tb* and *Ce* at the specific concentration in Japanese Patent Laid-open No. Hei 11-71581 –Tamatani, as taught by Beers et al, to improve activation process by adding the small amount of *Ce*.

With regard to claims 11-13 , Japanese Patent Laid-open No. Hei 11-71581 when modified by Tamatani et al and Beers disclose (Tamatani et al) a gas discharging lamp comprising a mixture of green, blue, and a red light emitting phosphors (col. 10, lines 21-33; col. 23, lines 52-65)

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Laid-open No. Hei 11-71581 in view of Tamatani et al as applied to claim 1 above, and further in view of Beers et al and Yocom et al..

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Japanese Patent Laid-open No. Hei 11-71581 when modified by Tamatani et al and Beers et al, discloses all of the limitations, as applied to claim 8 above, plus rhombohedral configuration of the phosphor crystal as applied to claim 4 above with using Yocom et al..

7. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Laid-open No. Hei 11-71581 in view of Tamatani, as applied to claim 1 above, and further in view of Beers et al and further in view of Bechtel et al.

Japanese Patent Laid-open No. Hei 11-71581 when modified by Tamatani and Beers et al, discloses all of the limitations, as applied to claims 1, 8, and 13 above (regarding composition of green phosphor and the mixture of the three phosphor), but does not disclose the plasma display panel utilizing these phosphor materials.

Bechtel et al (US 5,998,047) disclose (Fig. 1) the plasma display device with a phosphor coating.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the composition of green phosphor and the mixture of the three phosphors to Bechtel et al device, as taught Japanese Patent Laid-open No. Hei 11-71581, Tamatani and Beers et al, to achieve desired colors at plasma display applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Gilman whose telephone number is (703) 305-0847. The examiner can normally be reached on Monday-Friday, 10:30 a.m. - 8:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on (703) 308-2319. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7722 for After Final communications.

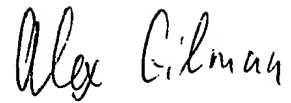
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

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Alexander Gilman

A handwritten signature in cursive script that reads "Alex Gilman". The signature is written in black ink and is positioned to the right of the printed name "Alexander Gilman".

September 19, 2002